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GEOGRAPHICAL PUBLICATIONS

(Reviews and Titles of Books, Papers, and Maps)

For key to classification see "Explanatory Note" in the July number, pp. 77-81

NORTH AMERICA

United States

South Atlantic States

—— ***Eagle Rock, Virginia, sheet.*** ***[Topographic map of the United States.]*** 1:62,500. Surveyed in 1908 and 1913; edition of 1915. U. S. Geological Survey, Washington, D. C. [An excellent illustration of the topography characteristic of three-cycle folded mountains. Parallel ridges of moderately even crest preserve a suggestion of the so-called Cretaceous peneplane of the Appalachian Mountain province, while the Tertiary peneplane is well preserved in the lowlands, except where the beautiful entrenched meanders of the James River and its branches have opened out a post-Tertiary trench from one-fourth to one-half mile broad. Trellis drainage, water gaps, an occasional wind gap, and abandoned meander courses are well represented. The accompanying diagram is based on the northwestern two-thirds of the Eagle Rock sheet and shows the essential features of the region mapped.—D. W. J.]

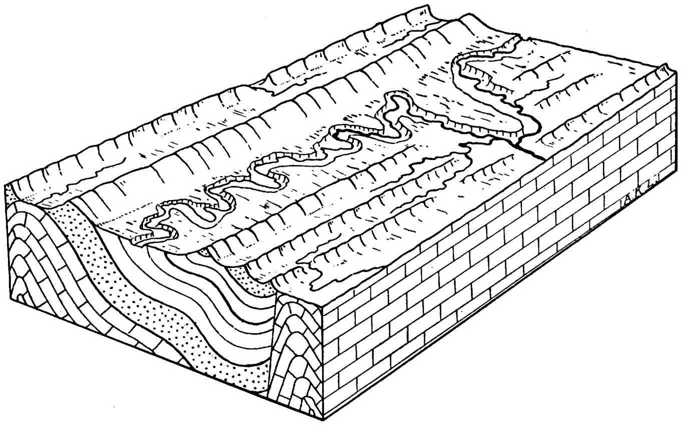

FIG. 1—Block diagram of the region about the headwaters of the James River, Virginia, from the Eagle Rock, Va., topographic sheet. Drawn by A. K. Lobeck.

North-Central States

SCHOCKEL, B. H. **Settlement and development of Jo Daviess County.** Maps, diagrs., ills., bibliogr. *Illinois Geol. Survey Bull. No. 26,* pp. 173-228 (Chapter 10). Urbana, 1916.

The dominant influences in the earlier settlement of Jo Daviess County (in the extreme northwestern corner of Illinois) were its mineral wealth and its location on the east bank of the Mississippi. Desultory Indian mining began to acquire significance with the advent of the white man. Early in the eighteenth century lead became a regular article of commerce between the Indians and the French traders. Galena, favorably situated on a navigable stream close to its confluence with the Mississippi, grew to prominence as a trading post. No very serious exploitation was undertaken until 1823: then the boom commenced and the usual influx of population followed.

It was estimated that the entire mining region of the Upper Mississippi contained not less than 10,000 miners in 1830, a cosmopolitan crowd including many Irish and men from the declining mines of Cornwall. The output grew enormously. The region contributed the major part of the supply that, in 1845, put the United States into the foremost position as a world-producer of lead, whereas only fifteen years before she had been importing from Europe. As late as 1852 and even after rapid decline in output the region still accounted for 87 per cent of the country's total. Decay ensued with exhaustion of the richer and more accessible ores and was accelerated by the rival attractions offered by Californian gold and Lake Superior copper and also by internal changes favoring the development of agriculture and the progress of improvement works in the state. The fortunes of mining and farming were always more or less complementary. Farming was originally tributary to the mineral industry. It prospered most during periods of depression in the mines, but its progress was steady. By 1840 the number of farmers in the county exceeded the miners, and a few years later the regular export of agricultural produce was begun. Real agricultural expansion took place with the opening up of eastern routes. The county secured a portion of the migration from the North Atlantic states, although, located in the driftless area and possessing rough topography and poor soil it did not, as an agricultural district, compare favorably with adjacent lands.

The county naturally faces south. Its early intercourse was almost exclusively via the Mississippi; its early organizations and institutions had a Southern aspect. Exceptionally, a commercial outlet was found to the St. Lawrence, as in the days of the first French-Canadian traders, during the first readjustments following the Louisiana Cession, and still later for the supply of bullets to the English during the War of 1812. Eastward the vast extent of unsettled prairie barred the way until the construction of the Erie Canal and the establishment of steam navigation on the Great Lakes shortened tremendously the time and cost of transportation. The Illinois and Michigan Canal (1848) also accomplished something towards the eastward diversion of trade that was finally sealed by the construction of the railroad between Chicago and Galena in 1855. Not long after, in the Civil War, the eastern routes acquired a strategic importance as lines of communication transmitting food products and lead to the forces of the North.

Since 1870 the county has declined in population and general productivity. The decline has been greatest in the lead-producing townships. Data on property, land values, and so forth ''seem to imply in some ways the economic inferiority of the mining to the non-mining townships.'' Further study of the problem here presented would be interesting.

There is a full list of bibliographic references, but many parts of the text have too much merely encyclopedic information unrelated to either real history or geography.

Clark, D. E. **The westward movement in the Upper Mississippi Valley during the fifties.** *Proc. Mississippi Valley Hist. Assoc. for the Year 1913-14* (Vol. 7), pp. 212-219. Torch Press, Cedar Rapids, Ia., 1914.

Condit, D. D. **Structure of the Berea oil sand in the Summerfield quadrangle, Guernsey, Noble, and Monroe Counties, Ohio.** Maps, diagrs., bibliogr. *U. S. Geol. Surv. Bull. 621-N,* pp. 217-231. Washington, 1916.

Condit, D. D. **Structure of the Berea oil sand in the Woodsfield quadrangle, Belmont, Monroe, Noble, and Guernsey Counties, Ohio.** Maps, diagrs., bibliogr. *U. S. Geol. Surv. Bull. 621-O,* pp. 233-249. Washington, 1916.

Freeman, O. W. **A geographic study of the growth and distribution of population in Michigan.** Maps. *Fifteenth Rept. Michigan Acad. of Sci.,* pp. 39-53. Lansing, 1913. [Maps for each decade since 1820 showing population by townships.]

Gardner, J. H. **A stratigraphic disturbance through the Ohio Valley, running from the Appalachian Plateau in Pennsylvania to the Ozark Mountains in Missouri.** Map. *Bull. Geol. Soc. of America,* Vol. 26, 1915, No. 4, pp. 477-483.

Grover, N. C. **Surface water supply of the United States, 1914. Part 5: Hudson Bay and Upper Mississippi River basins.** xxix and 247 pp.; ills., index, bibliogr. *U. S. Geol. Surv. Water-Supply Paper 385.* Washington, 1915.

Harper, R. M. **Car-window notes on the vegetation of the Upper Peninsula.** *Fifteenth Rept. Michigan Acad. of Sci.,* pp. 193-198. Lansing, 1913.

Hopkins, C. G., J. G. Mosier, E. Van Alstine, and F. W. Garrett. **Winnebago County soils.** 76 pp.; maps, ills., bibliogr. *Univ. of Illinois Agric. Exper. Sta. Soil Rept. No. 12.* Urbana, 1916.

Kay, F. H. **Petroleum in Illinois in 1914 and 1915.** *Illinois Geol. Survey Bull. No. 33,* pp. 7-25. Urbana, 1916.

Mears, L. W. **The sod house as a form of shelter: Where? what? why?** Bibliogr. *Journ. of Geogr.,* Vol. 14, 1915-16, No. 10, pp. 385-389.

—— **Minnesota Educational Association, committee on elementary course of**

study of the, Report of the, on elimination of subject-matter in arithmetic, American history, composition, English grammar, geography, and reading. 15 pp. *Minnesota Dept. of Educ. Bull. No. 51.* Minneapolis, 1914, reprinted, 1915.

QUICK, B. E. **The pine hills at Lowell, Michigan.** *Fifteenth Rept. Michigan Acad. of Sci.,* pp. 145-146. Lansing, 1913.

SAVAGE, T. E. **Geologic structure of Canton and Avon quadrangles.** Maps, diagrs. *Illinois Geol. Survey Bull. No. 33,* pp. 27-36. Urbana, 1916.

SHERMAN, L. K. **Illinois River flood.** Diagr. *Engineering News,* Vol. 75, 1916, No. 12, pp. 550-551.

SMITH, R. A. **The Saginaw oil field.** *Fifteenth Rept. Michigan Acad. of Sci.,* pp. 33-38. Lansing, 1913.

STREIGHTOFF, F. D., AND F. H. STREIGHTOFF. **Indiana: A social and economic survey.** With a chapter on charities and corrections by C. C. North. 261 pp. 9½ x 6½. [First five chapter headings read: The Physical Basis; Trees; Agriculture; Manufactures; Transportation.]

THWAITES, R. G., edit. (1) **The fur-trade in Wisconsin, 1812-1825;** (2) **A Wisconsin fur-traders' journal, 1803-04,** by Michel Curot. Ills., index. *Collections of the State Hist. Soc. of Wisconsin,* Vol. 20, pp. 1-395 and 396-471, respectively. Madison, 1911. [The Wisconsin Historical Society has undertaken the publication of a selected body of documentary material for first-hand study of the Wisconsin fur trade. This, the second volume, embraces the critical transition period between the years 1812-1825. American governmental control of the Northwest posts (1796) wrought little change until the War of 1812. Under the strain of political as well as commercial rivalry the old régime broke down, resolving itself into a struggle between the Government fur trade factories, the private traders, and the great American and Canadian companies. The period terminated with the triumph of the last.]

UPHAM, WARREN. **Explorations and surveys of the Minnesota and Red Rivers.** *Proc. Mississippi Valley Hist. Assoc. for the Year 1913-14* (Vol. 7), pp. 82-92. Torch Press, Cedar Rapids, Ia., 1914.

WILL, G. F. **The Cheyenne Indians in North Dakota.** *Proc. Mississippi Valley Hist. Assoc. for the Year 1913-14,* Vol. 7, pp. 67-78. Torch Press, Cedar Rapids, Ia., 1914.

SOUTH AMERICA

GENERAL

MOSES, BERNARD. **The Spanish dependencies in South America: An introduction to the history of their civilisation.** Vol. I, xxvi and 394 pp.; Vol. II, ix and 44 pp., index. Harper & Brothers, New York, 1914. 9 x 6.

As one of the few works of its kind written in English and as the mature result of long scholarly labor in the field to which it pertains, this book is welcome. In it is presented an account of what Professor Moses terms the middle period (1550-1730) of Spanish rule in South America—that "marked by the organization and development of political societies dependent on Spain." More than half the first volume, however, is concerned with the first period, that of the discoveries and great explorations. These introductory chapters are largely composed of material, selected and rearranged, from the author's earlier work, "Establishment of Spanish Rule in America," published in 1898.

The method is tropical in treatment, but as there is no conscious recognition of the fundamental importance of geographic relations the geographer must hunt through many weary pages to find material—and there is such—that will prove of interest to him. Under such circumstances one particularly deplores the lack of an organized and annotated bibliography that would allow further pursuit of the outcropping points of interest. To give one illustration: In the chapter on Travel and Transportation there is allusion to and quotation from "a letter dated August 3, 1729 (of) Padre Gervasoni" (Vol. 2, p. 388), but no clue as to where this seemingly interesting document may be found. The footnotes carry references to important and in some cases little-known source material, but they are disposed in so desultory and erratic a fashion that their use must be laborious or fortuitous.

ALBES, EDWARD. **Yerba mate, the tea of South America.** Ills. *Bull. Pan American Union,* Vol. 42, 1916, No. 5, pp. 625-643.

CLOSE, C. F. **Gravity deflections in the Andes.** Diagr. *Geogr. Journ.,* Vol. 47, 1916, No. 6, pp. 464-467.

Day, L. G. **South American Trails.** Ills. *Amer. Museum Journ.,* Vol. 16, 1916, No. 1, pp. 23-44.

—— **Latin American description and history, Books and magazine articles on, received in the Columbus Memorial Library of the Pan American Union: Supplement No. 2.** 136 pp. The Pan American Union, Washington, 1914. [The original list was printed in 1907 and Supplement No. 1 in 1909.]

Reid, W. A. **Motor cars and highways in South America.** Ills. *Bull. Pan American Union,* Vol. 42, 1916, No. 5, pp. 644-665.

Reid, W. A. **Navigation on South American rivers.** Ills. *Bull. Pan American Union,* Vol. 43, 1916, No. 1, pp. 13-32.

Simmons, R. E. **Lumber markets of the east coast of South America.** 121 pp.; ills. *Bur. of Foreign and Domestic Comm. Special Agents Ser. No. 112.* Dept. of Commerce, Washington, D. C., 1916. [Abstracted in this number, pp. 304-306.]

Simmons, R. E. **Lumber markets of the west and north coasts of South America.** 149 pp.; map, ills. *Bur. of Foreign and Domestic Comm. Special Agents Ser. No. 117.* Dept. of Commerce, Washington, D. C., 1916. [Abstracted in this number, pp. 304-306.]

Spinden, H. J. **The question of the zodiac in America.** Ills., bibliogr. *Amer. Anthropologist,* Vol. 18, 1916, No. 1, pp. 53-80. [Was the zodiac a conception among pre-Columbian Aztecs, Mayas, and Incas? Probably not.]

EUROPE

British Isles

Cressy, Edward. **An outline of industrial history, with special reference to problems of the present day.** xiv and 364 pp.; diagr., index, bibliogr. Macmillan & Co., Ltd., New York, 1915. $1.10. 7½ x 5.

The past, about which the historians write, is dead. They especially aim to make it so in order that they may maintain that much-sought impartiality which history is supposed to possess. Thus the school book of history drops the boy off a generation or two ago and modern society demands that he go out and vote intelligently on the questions of the day. The interval between his school history and his ballot box is covered by a maze of governmental reports, monographs, and current, dilute, biased, usually ephemeral publications. Mr. Cressy's book is an attempt to guide the young Briton through this critical period and help him to understand the present.

There are eighteen chapters divided into groups. Under "Scientific and Technical Progress," chapters on food and farming, textiles, fuel, and science in industry cover 128 pages; facilities for commercial development, 55 pages; the evolution of industrial management, 37 pages; industry and politics (franchise, factory legislation, education, etc.), 75 pages. Lastly comes a carefully selected list of 76 books, by which the elementary student may extend his knowledge in particular fields. The frontispiece, a chart showing British population for eight centuries, is most striking. The book has been carefully prepared and gives an excellent brief review of British industrial history.

J. Russell Smith.

Angelbeck, A. **Staffordshire (The agricultural geography of England on a regional basis, III).** Maps. *Geogr. Teacher,* No. 43, Vol. 8, 1915, Part 3, pp. 154-163.

Bone, Lucy. **Experimental work with young children on the Ordnance Survey map of the district of Sutton, Surrey.** Maps. *Geogr. Teacher,* No. 43, Vol. 8, 1915, Part 3, pp. 188-192.

Brodie, F. J. **The incidence of bright sunshine over the United Kingdom during the thirty years 1881-1910.** Maps, diagrs. *Quart. Journ. Royal Meteorol. Soc.,* No. 177, Vol. 42, 1916, pp. 23-38.

Claiborne, H. C. **Swansea.** *Suppl. to Commerce Repts.,* Ann. Series, 1916, No. 19b, pp. 11-15. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

Claxton, W. J. **An industrial geography of Britain.** 143 pp.; maps, diagrs., ills. George G. Harrap & Co., London, 1915. 9d. 7½ x 5.

Claxton, W. J. **Our country's industrial history.** 253 pp.; maps, ills., index. George G. Harrap & Co., London, 1915. 1s. 6d. 7½ x 5.

—— **Coal-fields in England, The search for new.** Map, diagrs. *Nature,* No. 2431, Vol. 97, 1916, June 1, pp. 292-294. ["Abridged from a discourse delivered at the Royal Institution on Friday, March 17, by Dr. A. Strahan, F.R.S."]

COMISSOPOLOS, N. A. **On the seasonal variability of rainfall over the British Isles.** Map. *Quart. Journ. Royal Meteorol. Soc.*, No. 177, Vol. 42, 1916, pp. 13-20. [A method of treating rainfall statistics suggested by the paper "Isomeric Rainfall Maps of the British Isles" by H. R. Mill and Carle Salter (*Quart. Journ. Roy. Meteorol. Soc.*, Vol. 41, London, 1915). This alternative method was tried by the author in the course of experimenting on data for the British Isles before applying methods to the discussion of the rainfall of northeastern Africa.]

COX, A. H. **The geology of the district between Abereiddy and Abercastle (Pembrokeshire).** Maps, diagrs., ills. *Quart. Journ. of the Geol. Soc.*, No. 282, Vol. 71, 1916, pp. 273-342. London. [With colored geological map, 1:15,840.]

DUNLOP, ANDREW. **On a raised beach on the southern coast of Jersey.** Diagr. *Quart. Journ. of the Geol. Soc.*, No. 282, Vol. 71, 1916, pp. 150-154. London.

EARLY, W. W. **Leicester Agency.** *Suppl. to Commerce Repts.*, Ann. Series, 1916, No. 19a, pp. 33-35. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

ELLIOTT, M. S. **The historical geography of the Weald as exemplified round Tonbridge.** Maps. *Geogr. Teacher*, No. 43, Vol. 8, 1915, Part 3, pp. 173-179.

HALE, F. D. **Huddersfield.** *Suppl. to Commerce Repts.*, Ann. Series, 1916, No. 19a, pp. 21-25. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

H[INKS], A. R. **The scientific work of the Ordnance Survey.** *Geogr. Journ.*, Vol. 46, 1915, No. 6, pp. 460-464. [Based on recent publications of that organization.]

HITCH, C. M. **Nottingham.** *Suppl. to Commerce Repts.*, Ann. Series, 1916, No. 19a, pp. 25-33. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

ISAAC, V. K. **The mouth of the river Cuckmere.** Maps, ills. *Geogr. Teacher*, No. 43, Vol. 8, 1915, Part 3, pp. 192-194.

JONES, O. T., AND W. J. PUGH. **The geology of the district around Machynlleth and the Llyfnant Valley.** Map, diagrs. *Quart. Journ. of the Geol. Soc.*, No. 282, Vol. 71, 1916, pp. 343-385. London.

KINVIG, R. H. **The historical geography of the West Country woollen industry.** Map. *Geogr. Teacher*, No. 44, Vol. 8, 1916, Part 4, pp. 243-254; Part 5, pp. 290-306.

RHODES, J. E. W. **Notes on the former courses of the River Devon: A suggested evolution for part of the river system of Fife and Kinross.** Maps, diagrs. *Scottish Geogr. Mag.*, Vol. 32, 1916, No. 5, pp. 209-216.

SAVAGE, J. M. **Sheffield.** *Suppl. to Commerce Repts.*, Ann. Series, 1916, No. 19a, pp. 35-40. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C. [Includes the progress of industry, e. g. the steel trade of Sheffield, consequent on the war.]

TAYLOR, S. M. **Birmingham.** *Suppl. to Commerce Repts.*, Ann. Series, 1916, No. 19a, pp. 11-21. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

THOMPSON, W. H. **The daily food ration of Great Britain.** *Nature*, No. 2416, Vol. 96, 1916, Feb. 17, pp. 687-690. ["There can be no doubt, and the fact needs reiteration, that the arable land of the United Kingdom is not used to the best advantage in the matter of food production."]

VAN SANT, H. D. **Dunfermline.** *Suppl. to Commerce Repts.*, Ann. Series, 1916, No. 19b, pp. 8-11. Bur. of Foreign and Domestic Commerce, Dept. of Commerce, Washington, D. C.

AUSTRIA-HUNGARY

KREBS, NORBERT. **Länderkunde der österreichischen Alpen.** (Series: Bibliothek länderkundlicher Handbücher, herausgegeben von Dr. A. Penck). xv and 556 pp.; maps, diagrs., ills., bibliogr., index. J. Engelhorns Nachf., Stuttgart, 1913. M. 20. 9½ x 6½.

The publishers of Ratzel's monumental "Bibliothek geographischer Handbücher" are undertaking another equally ambitious task. The new project, "Bibliothek länderkundlicher Handbücher," is under the editorial direction of Professor Albrecht Penck. In addition to the volume under discussion, two others have been announced, one on Scandinavia and one on the East Indies. The authorship of the series is international.

The present work by Doctor Krebs on the Austrian Alps is a notable addition to the literature of regional geography. It is a careful and intelligent piece of work, the fruit of scholarly research on a comprehensive plan. The two chief problems of the author have consisted in following out the geographic factors in a region of great complexity and in resolving the area into coherent subdivisions, convenient for individual treatment. The author has combined the voluminous literature on the eastern Alps with his own intimate knowledge of the region into an account which contains an extraordinary amount of good geographic material. The only serious criticism is that in places geological and especially morphological facts are stressed unnecessarily. The American geographer will be interested to note that the author fears his Continental colleagues will find too little rather than too much of this sort of thing and so deems it necessary to defend the amount of biogeographic material which is introduced.

Alpine conditions are pictured with remarkable clearness. This fact, combined with a diction at the same time vigorous and graceful, and for the most part also terse, make the book as a whole readable. Its utility for reference purposes is enhanced by the consistent and detailed use of section headings. Here and there an Austrian idiom raises difficulties for the reader.

The volume consists of two parts of contrasted treatment. The first part is a summary of the geography of the Austrian Alps as a whole. In the second part eight sub-regions are considered, largely by Davis' method of explanatory description. The first part may be read consecutively, the second part is intended primarily for reference purposes. Pages 8 to 14 are devoted to a suggestive discussion of the possible bases of geographic subdivision and to the scheme by which the sub-regions of the second part were determined.

A large part of the physiographic material in both parts consists of accounts of the manner in which rock formations have expressed themselves in topography and drainage. The nature and causes of soilflow, landslips, and related phenomena receive considerable attention. The topographic effects of climate and vegetation are properly brought out, and a graphic account is given of denudation on the southern slopes of the Alps, with their summer drought and limestone soils.

The great variations of climatic conditions from place to place are the result not merely of varying altitude but of varying disposition of mountain ranges and valleys. Where deep valleys open broadly to adjacent plains, the climate of the lowlands, with some modifications, may penetrate far into the mountains and cause certain passes, as the Brenner, to constitute striking climatic divides. The occurrence of the föhn and the inversion of temperatures in valleys are largely dependent on the position and configuration of the valley. A detailed precipitation map registers the partial exclusion because of mountain barriers of rainfall from certain valleys of western Tyrol. The intensity of insolation and high temperatures of the ground constitute the chief points of contrast between Alpine and polar climate and explain the early period of bloom of the Alpine flora and the rapid ripening of grain in the high valleys.

Chapters 8 to 10, dealing with settlement, economic conditions, and distribution of population constitute the most generally valuable part of the book. The student of European geography or of mountain environment will find here a remarkable wealth of material, which cannot be summarized adequately in a review. A single example therefore is given, the economy of the *alm*. The Alpine peasant distinguishes a number of alms, according to their position. The extension and subsequent contraction of the farm area with the seasons results in a somewhat nomadic domestic economy among the peasants of the alm, and feast-days of the inhabitants are connected with this migration. While the people are on the high alm-meadows they have the brief opportunity of associating with their neighbors from other valleys, and widely attended contests and celebrations result. The alm-meadows are managed most efficiently by common enterprise, so that ancient forms of communistic regulations are still largely observed. In some sections these grasslands have been unduly exploited with the result that stony surfaces appear and lower forms of vegetation are crowding in. Pasturing in forests and the depression of the upper limits of forests through wood-cutting also react unfavorably upon the alm-lands, which are largely at present in a period of depreciation.

The second part contains in disseminated form many notes on human geography. The difficulty of crossing the Arlberg has imparted to Vorarlberg a centrifugal tendency with reference to Austria. Innsbruck, in the east-west Inn Valley, at the northern base of the Brenner Pass, and controlling several routes to Bavaria, has had as the result of its location a long and important history, and is today secure in its supremacy among cities of the Tyrol. Geographic moments in the development of every city of note are established similarly, and the volume closes with an account of the geographic location of Vienna, of the changes in its plan, and of its economic significance.

Mention should be made of several successful cartographic experiments in the detailed representation of the distribution of cultures, of population, and the correspondence between topography and forms of settlement. The half-tones are supplied with a brief physiographic and geographic explanation. CARL O. SAUER.

FINSTERWALDER, S. **Nachmessungen an Gletschern beiderseits des Brenner im Sommer 1915.** *Zeitschr. für Gletscherkunde,* Vol. 10, 1916, No. 1, pp. 51-56.

FRANCHI, ANNA. **Le città sorelle.** 214 pp. Fratelli Treves, Milan, 1915. 10 x 6. [The "sister cities" of the Italian-speaking borderlands of the Adriatic, including Trieste, Fiume, Pola, the Dalmatian coast towns, and the Italian cities of the "Trentino,"—Trent, Riva, Rovereto. Good illustrations.]

KOCH, NÁNDOR. **Die blaue Grotte von Busí.** Map, ills. *A Tenger,* Vol. 6, 1916, No. 2, pp. 76-81. Budapest. [In Hungarian.]

MAZELLE, EDUARD. **Über die Windverhältnisse in den höheren Luftschichten nach den Pilotballonbeobachtungen in Triest.** *Meteorol. Zeitschr.,* Vol. 33, 1916, No. 2, pp. 64-69.

AFRICA

SOUTH AFRICA

—— **Diamanten, Die deutschen, und ihre Gewinnung; Eine Erinnerungsschrift zur Landesausstellung Windhuk 1914,** herausgegeben von den Förderern. 95 pp., ills. Dietrich Reimer, Berlin, 1914. M. 3. 9½ x 6.

This interesting and elaborately illustrated work was issued in connection with the Windhuk exposition of 1914 and prepared under the direction of the Lüderitzbucht Chamber of Mines and the diamond-mining companies.

The existence of great diamond deposits in British South Africa naturally led to prospecting in German Southwest Africa, resulting in the discovery of some "blue ground" but no promising amount of diamonds. About 1908 reports were circulated of the discovery of diamonds near Lüderitzbucht, but they were received with scepticism, as all previous attempts to find any minerals of economic value in the desert area of that region had ended in failure. The discovery was due to a railroad engineer named Stauch, and, the diamond finds having been substantiated, a small stampede for the region took place.

The diamonds occur scattered through the dune sands, and all attempts to determine their exact source have thus far been unsuccessful. In 1913 the production amounted to about 1,500,000 karats, valued at 63,018,000 marks, while the total production to the end of that year was 4,693,321 karats, valued at 151,926,000 marks. A number of companies are engaged in working the diamond-bearing sands; the early operations were by hand, but the installation later of power-driven machinery has resulted in a considerably greater saving of gem stones. HEINRICH RIES.

LACY, GEORGE. **South African exploration: Pioneer hunters, traders, and explorers of South Africa.** Ills. ("South Africa" Handbooks reprinted from *South Africa*): No. 63, 32 pp., Oct., 1911; No. 81, 28 pp., Aug., 1915; No. 82, 28 pp., Dec., 1915; No. 83, 28 pp., May, 1916. Office of *South Africa,* London. 6d each. 6 x 5.

These four small books, containing in all a little over one hundred pages, briefly describe the work of some ninety pioneers who went to South Africa in the earlier days of white enterprise, to hunt, to prospect, or to travel. Most of them, having written no books nor otherwise attracted wide public notice, are unknown to fame. The task of finding them out and showing just what they did to shape the beginnings of our knowledge of South Africa was arduous; and much credit is due to the author for his laborious and successful efforts to bring them into the light. The leading men among them, such as C. J. Andersson, Captain J. E. Alexander, W. C. Baldwin, Thomas Baines, and a few others are known, however, through their writings.

The author's good work would have been more gracefully performed if he had omitted some wholly gratuitous disparagement of a number of leaders in African exploration. He says, for example, that Livingstone "always posed as the discoverer of Lake Ngami." What words can be found in all of Livingstone's writings to justify this remark? He traveled with the aid and in the company of the wealthy English sportsman W. C. Oswell; and it was fortunate for that gentleman that his protégé had the fitness to write the first account of the Kalihari Desert and of Lake Ngami as they found them. Livingstone made known the results of his studies; but it was Oswell's expedition and it was he who received the medal of the Paris Geographical Society for the discovery of the lake. CYRUS C. ADAMS.

—— **British South Africa Co., The: Directors' report and accounts for the year ended 31st March, 1915.** 40 pp.; index. London, [1916]. [Despite the war

Rhodesia has made satisfactory economic progress during the year ended March 31, 1915. This is shown by the agricultural and ranching returns as well as in the increased mineral production, still the dominant industry. Gold, maize, hides, and skins are the chief products contributing to the increased export. The Northern Territory owes not a little of its late advancement to the development of the copper mining in the Katanga district of the southern Congo.]

FRIEDLANDER, VERA. **The storehouse of the gold of Ophir.** Map, ills. *Travel,* Vol. 27, 1916, No. 2, pp. 14-17 and 48. [Account of Great Zimbabwe and the various archeological interpretations concerning it, including its possible identity with the Ophir of the Bible.]

LOUW, C. S. **A manual of the Chikaranga language, with grammar, exercises, useful conversational sentences, and vocabulary.** x and 397 pp. Philpott & Collins, Bulawayo, 1915. 12s 6d. 8 x 5½. [''Chikaranga is the language spoken by the natives of Mashonaland, Southern Rhodesia.'']

MELLOR, E. T. **The East Rand.** Map, diagrs. *Trans. Geol. Soc. of South Africa,* Vol. 18, 1915, Jan.-Dec., pp. 57-71.

—— **Moçambique, Caminho de ferro de, e recursos que oferece o norte desta provincia.** *Bol. Soc. de Geogr. de Lisboa,* Vol. 33, 1915, No. 9-10, pp. 327-332.

—— **Nyasaland: Report for 1914-15.** 21 pp. *Ann. Colonial Repts. No. 883.* London, 1916.

ROBERTS, NOEL. **The Bagananoa or Ma-Laboch: Notes on their early history, customs, and creed.** Ills. *South African Journ. of Sci.,* Vol. 12, 1916, No. 7, pp. 241-256. [''The Bagananoa are Bantus'' who ''occupy a strong position on the Blaauwberg Mountain, in the northern Transvaal, which they have held for about a century and a half.'']

ROGERS, A. W. **The geology of part of Namaqualand.** Map, diagrs., ills. *Trans. Geol. Soc. of South Africa,* Vol. 18, 1915, Jan.-Dec., pp. 72-101.

THORNTON, R. W. **The ostrich feather industry in South Africa.** *South African Journ. of Sci.,* Vol. 12, 1916, No. 7, pp. 272-279.

WAGNER, P. A. **The geology and mineral industry of South-west Africa.** xvi and 119 pp.; maps, diagrs., ills., index. *Union of South Africa Geol. Survey Memoir No. 7.* Pretoria, 1916. [Describes the country by physical divisions: see abstract in the August *Review,* pp. 155-156.]

ASIA

TURKEY IN ASIA, ARABIA, CAUCASIA, IRAN

SYKES, P. M. **A history of Persia.** Maps, ills., index, bibliogr. Vol. I, xxvi and 544 pp.; Vol. II, xvii and 565 pp. Macmillan and Co., Ltd., London, 1915. $15.00. 9 x 5½.

These volumes, based on a personal contact with Persia during a residence of twenty-one years and a mastery of the literature of ancient and modern Persia, are offered as a self-contained and complete history of the eastern country.

The author begins the work with three chapters on the configuration and climate of the land and follows this with as detailed an account as can be found of Persian history from the very hazy Neolithic period to the granting of a constitution in 1906. The introductory geographic description of Persia for a volume of this kind is remarkably well done. The author appears familiar alike with the early accounts of the country as issued by the Hakluyt Society or reported by its pioneer travelers and invaders and with the more recent discussions of de Morgan, Hedin, and Huntington. He is impressed, as others have been, with the apparent rapidity of the changes towards aridity which the condition of many of the provinces suggests. On the flora, fauna, and mineral wealth there are brief but illuminating paragraphs which, imbued with personal experiences, are more than catalogs. Before beginning the story of Persia's history the author introduces a chapter to show the changes in the land since the dawn of history and the result of these upon the inhabitants. The advances of the Mesopotamian Valley into the Persian Gulf, the former courses and volume of the rivers, especially the Euphrates, Tigris, Karun, and Oxus, and the mention by early writers of plants and animals now foreign to the land give a quantitative value to the description of Elam and Babylonia. In addition to all this, the book teems with illustrations of a wide variety of subjects, among them pictures of the land which give a good idea of the complexity and variety of Persia's scenery and the life conditions of its people. In these and the maps, which are particularly well executed, the volumes excel.

The main theme of the book is the historical account, and in this the geographer may find interesting and capable discussions of physical and social controls. Two chapters only are instanced: one on the struggle for the ascendancy of the Persian Gulf, which, as a strategic point in trade, has been under five European powers since Dias rounded the Cape of Good Hope in 1487; another on the art portraying the genius of Persia which is so strongly impressed in ceramics, textiles, and metal work.

Persia in recent years has been constantly before the public, and comprehensive and authoritative books dealing with the Persian point of view have not been within our reach. This void seems now to have been filled. It is strange, however, in dealing with a country which has been the seat of so much turmoil within a few years to publish in 1915 a book on the history of Persia which is no further down to date than the granting of a constitutional government by the shah Muzaffar-u-Din in 1906.

ROBERT M. BROWN.

CASANOWICZ, I. M. **A colored drawing of the Medeba mosaic map of Palestine in the United States National Museum.** Map. *Proc. U. S. Natl. Museum,* Vol. 49, 1916, pp. 359-376. Smithsonian Institution, Washington.

—— **Cyprus, Salt from.** *Bull. of the Imperial Inst.,* Vol. 14, 1916, No. 1, pp. 37-41. [Suggests the possibilities of expanding the ancient local salt trade of the island.]

HODGE, R. M. **Historical geography of Bible Lands: A manual for teachers.** xxi and 53 pp.; maps. Charles Scribner's Sons, New York, 1915. 11 x 8. [Teacher's manual, with references, for a course in ''geography as a factor in Bible history.'']

L[AUNAY], L. D[E]. **Les pétroles sur le front de l'Irak.** Map. *La Nature,* No. 2227, 1916, June 3, pp. 359-360.

ROOME, J. C. **Impressions of Persia and Mesopotamia.** *Asiatic Rev.,* No. 21, Vol. 7, 1916, Jan. 1, pp. 58-62.

SELWYN-BROWN, ARTHUR. **Ancient Mesopotamia and the irrigation system that made it a fertile territory.** Map. *Scientific American Suppl.,* No. 2106, Vol. 81, May 13, p. 309.

POLAR REGIONS

ARCTIC

PORSILD, M. P. **Studies on the material culture of the Eskimo in West Greenland.** Diagrs., ills., bibliogr. *Meddelelser om Grønland,* Vol. 51, No. 5 (=pp. 113-250). Copenhagen, 1915.

Apparently because the Eskimo's life is generally thought to be simple and primitive even the best of the current textbooks tell little more than the geographies of fifty years ago. Yet his life is not simple, and as an adaptation to environment it is still wholly untold save in memoirs like the one under review. Geographic writers should seize the wealth of available material and make it their own.

Between pages 131 and 140 is an extraordinary description of the vital intimacy between the Eskimo and his fiords and ice-fields. The exact hunting methods adopted depend upon the ice, whether old or new; the surface, whether snow-covered or glassy; the sun, whether low or high; the currents, icebergs, headlands, and the degree of cold. Certain types of boots fit one set of conditions and not another; and so it is with the rifle, bow and arrow, net, club, harpoon, kyak, and likewise the exact method of attack. In a storm, for example, the sleeping sea otter is easy prey because the new-fallen snow deadens the footsteps of the hunter. Higher grades of skill must be attained in hunting under difficult conditions, until at last the most expert may hunt in that inferno of risk and toil, the feeding grounds at the edge of the glacier ice at the fiord head where calving icebergs, open water, and tidal eddies take their steady toll of life.

A settlement has not merely a chance location nor is it made with respect to shelter alone. What is the habit of the ice, of the current, of the game? Where are the headlands? Will there be open water at the right season and near shore? What are the supplementary resources of the land? Is there driftwood? These are the persistent inquiries of a tribe in seeking a new location. There are no trees, hence the driftwood is from far distant sources. It follows that it is broken and small, and a single piece will rarely serve for a bow. Now a bow must have two qualities—rigidity and elasticity. To secure the one, pieces of wood, generally three, are bound tightly together; to secure the other, strips of walrus hide are fastened on either side. Porsild calls the result one of the greatest inventions of our (*sic*) time. They have nets of split whalebone and use them through and under the ice. A surplus of light and heat is their idea of luxury.

This is only attained when nature conspires against the game to man's benefit. Here is paradise:

''When severe cold sets in suddenly, and with calm weather, it frequently happens that a school of white whales, or narwhals, is cut off from the open water by a broad belt of ice. The whales soon become exhausted owing to the difficulty of breathing, and if they find an opening in the ice they all resort to it, and cannot leave it again. Here, from twenty to several hundred animals may be found at such an opening. If this opening is small the animals may lie closely together; the narwhals, for instance, pushing their way to the edge and placing their tusks upon the ice. In calm weather their moaning may be heard for miles around, and the steam from their breathing rises from the hole into the air, so that such a *savssat* [as such a place is called] is soon discovered. According to the hunting by-laws in force it is the joint property of the surrounding settlements, and the finder gets a reward at the public expense, and everybody may secure for himself the right of possession by thrusting a harpoon into an animal. As the animal cannot get away, the form of the harpoon is quite immaterial, and it is only necessary that a small piece of line be attached to it in order to identify it. One by one the animals are killed—formerly with lances, now usually with guns—, drawn up, and driven away on sledges, and this may be continued till the whole flock is captured, or till the weather turns and the ice is broken up, when the animals are set free.''

There is also much on Eskimo migrations—a problem of growing interest; an admirable summary, pages 235-236; and a working bibliography that loses little in value because it includes only those books which the author had with him in Greenland.

ANDERSON, R. M. **Canadian Arctic Expedition, 1915.** *Summary Rept. Geol. Survey of Canada for 1915,* pp. 220-236. Ottawa, 1916. [See also items on ''Return of the Southern Party of the Stefansson Expedition'' and ''Explorations in Victoria Island'' in the September *Review,* pp. 232-233.]

[CHIPMAN, K. G., AND J. R. COX. **Report of the Topographical Division], Canadian Arctic Expedition.** *Summary Rept. Geol. Survey of Canada for 1915,* pp. 244 [original incorrectly 424]-245. Ottawa, 1916. [See also items in the September *Review,* pp. 232-233.]

—— **Expéditions polaires de Sverdrup et de Vilkickij, Radiotélegrammes des.** *Bull. de l'Acad. Imp. des Sci. [de Pétrograd],* Sér. 6, 1915, No. 7, pp. 566-584. [In Russian.]

GALITZINE, B. **Rapport sur la situation actuelle des expéditions polaires de Sverdrup et de Vilkickij.** *Bull. de l'Acad. Imp. des Sci. [de Pétrograd],* Sér. 6, 1915, No. 3, pp. 193-196. [In Russian.]

KOCH, J. P. **Vorläufiger Bericht über die wichtigsten glaziologischen Beobachtungen auf der dänischen Forschungsreise quer durch Nordgrönland 1912/13.** Map, diagrs., ills. *Zeitschr. für Gletscherkunde,* Vol. 10, 1916, No. 1, pp. 1-43.

O'NEILL, J. J. **Geological reports, Canadian Arctic Expedition, 1915.** *Summary Rept. Geol. Survey of Canada for 1915,* pp. 236-241. Ottawa, 1916. [See also references in note on ''Return of the Southern Party of the Stefansson Expedition'' in the September *Review,* p. 232.]

RASMUSSEN, KNUD. **Den II. Thule-Ekspedition til Nord-Grønland.** Map. *Geografisk Tidskrift,* Vol. 23, 1915-16, No. 5, pp. 198-200. Copenhagen. [Detailed plans of the 1916 trip, which were summarized in the July *Review,* pp. 65-66.]

WORLD AS A WHOLE AND LARGER PARTS

SCOTT, W. B. **A history of land mammals in the western hemisphere.** xiv and 693 pp.; ills., index. The Macmillan Co., New York, 1913. $5. 9½ x 6½.

The author says: ''The western portion of North America has preserved a marvelous series of records of the successive assemblages of animals which once dwelt in this continent; and in southernmost South America an almost equally complete record was made of the strange animals of this region.'' A wish to make this history intelligible led to the preparation of this book.

The work is primarily intended for the layman, yet it cannot fail to be of interest to those zoölogists who are interested in evolutionary theories. The first four chapters discuss methods of studying rocks and fossils, the classification of mammals, and the geographical development of the Americas in Cenozoic time. The geographical distribution of mammals receives very adequate treatment. Among the factors that determine the presence or absence of any species of animals, the author mentions climate, mountains, plateaus, rivers, deserts, and preoccupation by another species.

Moreover, he calls attention to the fact that the climate may have little to do with the presence or absence of any particular species. Thus many plants and animals, when artificially introduced into a new country, often multiply prodigiously, as the rabbit in Australia, the English sparrow in America, the gypsy moth in New England, etc.

A very interesting discussion of the succession of mammalian faunas in North and South America follows. The author shows that the llama, camel, and horse are really derived from a long line of ancestors which originally were native to North America but are now scattered abroad. This is surprising from a geographical point of view, although it is even more surprising to find that there were elephants and their relatives, the mastodons, living in North America. It is thought the mastodons were known to the early Indians. The elephants undoubtedly came from northern Asia by way of Alaska, where Bering Land (now the bed of Bering Sea) connected it with Asia. At least ten species of the horse roamed Mexico and the United States even into Alaska, but not the ancestor of the modern horse.

Other chapters deal with the early geological history of the horses, pig-like animals, carnivora, and the monkey-like animals. Concerning man, he says: ''There can be no question that man originated in the eastern hemisphere and at a very remote period. Abundant remains of his handiwork and of himself have been found in Europe as far back as the Pleistocene, and recent discoveries in England have increased the already known length of human habitation in Europe.''

A final chapter discusses the different ways in which mammalian evolution may have come about. Whether some species came into existence suddenly (as mutants) or by slow, continuous processes, is a question still unsettled and likely to remain so. The work is abundantly and well illustrated and contains a glossary and complete index.

R. W. Sharpe.

PHYSICAL GEOGRAPHY

Meteorology and Climatology

Bigelow, F. H. **A meteorological treatise on the circulation and radiation in the atmospheres of the earth and of the sun.** xi and 431 pp.; diagrs., index. John Wiley & Sons, Inc., New York, 1915. $5.00. 9½ x 6.

The title used on the back of the book, ''Atmospheric Circulation and Radiation,'' is undoubtedly the one by which it will be known to students of meteorology; but inasmuch as a large part of the volume deals with problems of the solar atmosphere, the title page, as given above, is a more exact designation.

There are certain books in every science which distinctly mark transitional periods in the development of that science. In meteorology, Ferrel's ''Popular Treatise on the Winds,'' published in 1889, may be instanced as such a book; and we think that the present volume may be put in the same class. As with Ferrel's book, so, too, this book is the outcome of many years of professional service. It sums up the matured thought of one who has been long in official harness and who knows the weakness of much that passes as authoritative. Bigelow has been something of a pioneer in the thermodynamics of the atmosphere and, if we may borrow a figure from woodcraft, has blazed a trail and made the way easier for the rest of us. In this book the author recognizes that the atmosphere is a real atmosphere, not an ideal one, as is generally assumed in mathematical treatises. It is a non-adiabatic atmosphere, and the gas coefficient, the so-called constant R in the characteristic equation, has different values at different heights, in the free air; and there is variability in specific heat. In fact there could be no circulation and no radiation such as do exist unless the specific heat did vary.

A most laudable purpose of the author is to save labor to other workers by giving full tables of equivalent values and conversion factors with numerous examples and results conveniently tabulated. All workers in meteorology, or shall we say aërography, long for the time when a single and uniform set of units shall be used. Bigelow brings together three systems of units, or rather three series of constants in three systems of units, and gives us gravitational force values in meter-kilogram-second, centimeter-gram-second, and foot-pound-second units, then mass or values of weight in the same three sets, and finally heat values. He prefers the first of them and suggests incidentally that if the divisions on the barometer scale be made 0.75 millimeter, the scale distance becomes 100 units of force; and pressure readings become immediately available for all forms of dynamic and thermodynamic meteorology. This scale, he holds, is equally valuable for public purposes and synoptic chart construction. Bigelow also says ''that it would improve matters greatly to mark barometers in terms of pressure of an atmosphere at sea-level and thermometers in degrees absolute.'' He makes no reference, however, to the use of the *megabar* atmosphere and the system employed at the

Blue Hill Observatory for at least two years, where the pressure is given in units of force, the level at which one million dynes is found being regarded as the base instead of sea-level. Thus a *kilobar* (one thousand bars or dynes) is the thousandth of an atmosphere and a far more convenient unit than the one proposed above. Nor do we find a reference at this point to the suggestions of Köppen, Bjerknes, and others, nor to Gold's paper on barometer readings in absolute units.

A characteristic generalization is found in equation No. 27, which shows that for unit mass the force of gravitation must be balanced by the change in pressure, the kinetic energy of circulation, and the radiating heat. While the sum of the energy of circulation and radiation can be computed through the difference of the specific heats, there is no way to separate the two except through direct observation of the velocity. In the free air, the three terms, gravitation, pressure, and circulation seldom balance, and hence equations based on adiabatic conditions do not give complete solutions of thermodynamic problems of the atmosphere. This is Bigelow's point of departure, and in our opinion marks the transition in the status of meteorology spoken of above.

One gets the impression that certain equations are used as foundations for rather lofty superstructures. There is another matter of minor importance but worth mentioning, and that is the use of the same symbol to represent entirely different quantities, and this even on the same page. Thus the all-important R does double duty as gas constant and radius of the earth. Meteorological writers from Ferrel to Bjerknes have been careless in this respect, and certain letters like g and r are as changeable as chameleons. The trouble arises from the fact that equations used in astronomy, geodesy, and physics have been carried over into meteorology.

Table 7 gives a summary of formulas and constants from the kinetic theory of gases for the atmosphere in the C. G. S. system, a much-needed table and the first of its kind; but we could wish that the value of an atmosphere had been taken as 1,000,000 dynes instead of the sea-level value of 1,013,235 dynes. Chapter II deals with working non-adiabatic equations and again emphasizes the effect of the absorption of solar radiation and the emission of atmospheric radiation in various ways. We have, as exemplified in Tables 14 and 19, practically a new thermodynamic meteorology. In Chapter III, entitled "The Hydrodynamics of the Atmosphere," there is an extended analysis of the forces of rotation and an application of the equations of motion to Ferrel's local cyclone and the German local cyclone. Isobars are centered as circles upon the vertical axis, though this is not the case in nature, as Bigelow points out, except in waterspouts, tornadoes, and hurricanes. Then follows a discussion of funnel-shaped and dumb-bell-shaped vortices in which use is made of Stokes's functions. Chapter IV, consisting of 64 pages, is to the meteorologist the most important chapter of the book, dealing as it does with the structure and construction of ocean and land cyclones and containing a clear and well-put historical review of the three leading theories of the physical causes of storms. These theories are: (1) Ferrel's warm-center and cold-center cyclones; (2) Hann's dynamic production of temperatures as found by observation; (3) Bigelow's asymmetric cyclone with warm and cold currents arranged in ridges, or streams of different densities and driven into local cyclonic and anticyclonic circulations by the force of gravitation.

Chapter V treats of radiation, ionization, and magnetic vectors in the earth's atmosphere. The theory of the pyrheliometer is given in detail, with examples of the relative steadiness of the radiation at stations having different elevations, with evidence tending to show that effective radiation at low levels is less than 2 calories; and that about 2.1 calories is reflected back to space, escaping direct observation, so that the true solar constant is really more than 4 calories per square centimeter per minute. This of course brings into question the mean value as given by Abbot of 1.93 by various observations; and the latest value obtained by balloon instruments at 22,000 meters of 1.88 calories for the date of ascent. One remark seems fair and worth remembering by all concerned in the controversy, that "at present one must be very conservative in attributing to solar radiation the entire apparent variation of the radiation measured by pyrheliometer and bolometer."

Bigelow's figure for the solar constant is 4.047 calories and for the temperature of the solar photosphere 6900° A.

Chapters VI and VII treat of thermodynamic values to the top of the atmosphere, and we have for the first time the complete story to a height of 50,000 meters. Figures 74 and 75 are significant, as is also Table 85, where thermodynamic data are extended from the 40,000-meter to the 90,000-meter level. The stratosphere, or so-called isothermal layer, from 11,000 to 38,000 meters, is defined as merely that part where the surviving solar radiation nearly balances the terrestrial radiation.

The typographical make-up of the book is excellent. ALEXANDER MCADIE.